FLOATING PARTICLES

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We have developed a numerical package to simulate particle motions in fluid interfaces. The particles are moved in a direct simulation respecting the fundamental equations for the motion of fluids and solid particles without the use of models. The fluid-particle motion is resolved by the method of distributed Lagrange multipliers and the interface is moved by the method of level sets.

Two different cases are treated. In the first case, the motion of the particles is computed under the constraint that the particles are smooth spheres, and the contact angle is fixed by the Young-Dupre law. In this case, the contact line position on the particle changes as the motion proceeds. In the second case, the motion of the particles is computed under the constraint that the interface is pinned to the sharp edges of particles so that the contact angle changes as the motion proceeds.